

U.S. Serial No. 09/684,328
Attorney Docket No. JA919990169US1
(YOR.235)

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REMARKS

An excess claim fee payment letter is submitted herewith for five (5) excess total claims.

Claims 1-25 are all the claims presently pending in the application.

Claim 11 has been amended to make editorial changes in conformance with U.S. Patent practice. Claims 15-25 have been added to provide more varied protection for the present invention.

Claims 1-14 stand rejected on prior art grounds under 35 U.S.C. § 103(a) as being unpatentable over Yutaka (U.S. Patent No. 5,664,163) in view of Peaslee (U.S. Patent No. 5,265,203).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

Applicants' invention, as disclosed and claimed, relates to a data transferring apparatus (and method) for transferring transfer packets each including one or more transfer data as objectives of transfer from a first apparatus to a second apparatus, wherein each transfer data includes commands indicating processes against a preliminarily assigned area.

In an illustrative, non-limiting embodiment of the invention as defined, for example, in independent claim 1, the first apparatus includes a scheduler for merging a plurality of the transfer data meeting a certain requirement, and a communication controller for generating transfer packets each including at least one of one or more the transfer data whose amount is within a certain predetermined range and one or more the merged transfer data. The communication controller transfers the generated transfer packets to the second apparatus.

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In another exemplary embodiment of the invention as define, for example, in independent claim 2, the first apparatus includes means for merging a plurality of the transfer data meeting a certain requirement, means for generating transfer packets each including at least one of one or more the transfer data whose amount is within a certain predetermined range and one or more the merged transfer data, and means for transferring the generated transfer packets to the second apparatus.

In yet another exemplary embodiment of the invention as define, for example, in independent claim 7, a method includes merging a plurality of the transfer data meeting a certain requirement, generating transfer packets each including at least one of one or more the transfer data whose amount is within a certain predetermined range and one or more the merged transfer data, and transferring the generated transfer packets to the second apparatus.

In another exemplary embodiment of the invention as define, for example, in independent claim 11, the first apparatus is capable of making a computer execute merging a plurality of the transfer data meeting a certain requirement, generating transfer packets each including at least one of one or more the transfer data whose amount is within a certain predetermined range and one or more the merged transfer data, and transferring the generated transfer packets to the second apparatus.

In conventional devices, a raster interface is used to transfer image data, for example, from a computer to a display apparatus, which requires a large amount of data. However, when an ultra-high resolution display apparatus is used, there is a possibility that the data transferring capacity of the communication channel between the computer the display apparatus will not be sufficient (e.g., see specification at page 1, lines 7-13).

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The claimed invention, on the other hand, solves the problems associated with such an image data stream being transferred from a computer to an ultra high resolution display apparatus (e.g., see specification at page 1, lines 17-18, and page 2 lines 1-2).

II. THE PRIOR ART REJECTION

Claims 1-14 stand rejected on prior art grounds under 35 U.S.C. § 103(a) as being unpatentable over Yutaka (U.S. Patent No. 5,664,163) in view of Peaslee (U.S. Patent No. 5,265,203).

The Examiner alleges that Yutaka discloses all of the features of independent claims 1 and 2, except for the plurality of transfer data merged by the scheduler being merged by meeting a certain requirement (e.g., see Office Action at page 3, lines 6-7). However, the Examiner alleges that Peaslee makes up for the deficiencies of Yutaka by disclosing a scheduler (which Peaslee calls a “cogenerator 10” in Figure 1) for merging a plurality of transfer data (e.g., see column 3, lines 19-23).

Accordingly, the Examiner alleges that it would have been obvious to modify the device of Yutaka with the device of Peaslee such that the scheduler merges the data in accordance with the mutual dependency of the instructions among themselves as suggested by Peaslee because Peaslee allegedly suggests that the data that are dependent on each other cannot be transferred at the same time (e.g., see Office Action at page 3, lines 17-21; citing Peaslee at column 5, lines 54-59).

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On the other hand, with respect to independent claims 7 and 11, the Examiner alleges that Yutaka and Peaslee each disclose both the apparatus and method according to the claimed invention.

Applicants respectfully disagree with the Examiner's position for several reasons, and therefore, respectfully traverse this rejection.

Applicants submit that the claimed invention solves different problems than those solved by Yutaka and Peaslee, and hence claims fundamentally different methods with different apparatuses than Yutaka and Peaslee.

Accordingly, contrary to the Examiner's position, Applicants submit that the ordinarily skilled artisan would not have been motivated to modify Yutaka based on Peaslee to arrive at the claimed invention. Moreover, even assuming *arguendo* that it would have been obvious to modify Yutaka based on Peaslee, Applicants respectfully submit that the combination of Yutaka and Peaslee would not disclose or suggest all of the features of the novel and unobvious combination of elements according to the claimed invention.

For example, as set forth in the present application (e.g., see specification at page 1, line 17-18; page 2, line 1-2), the claimed invention provides exemplary methods to solve problems associated an image data stream being transferred from a computer to an ultra high resolution display apparatus. Applicants submit that neither Yutaka nor Peaslee, alone or in combination, discloses or suggests all of the features of the claimed invention, or for that matter, provides the advantages derived therefrom, in as complete detail as recited in the claimed invention.

In the present invention, the exemplary first and second apparatuses include two redundant drawing engines. For example, one drawing engine in a computer (e.g., see drawing

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engine 122 in Figure 2; all reference numerals herein being used for the Examiner's clarity only and not for limiting the claims) and the other drawing engine in a display apparatus (e.g., see drawing engine 202 in Figure 5). Each drawing engine has a dedicated frame memory unit (e.g., see reference numeral 114 in Figure 1 for drawing engine 122 in Figure 2, and reference numeral 162 in Figure 1 for drawing engine 202 in Figure 5). The two drawing engines are intended to generate identical images in a slightly different timing due to the data transfer delay from the computer to the display apparatus.

On the other hand, the claimed invention includes a scheduler (e.g., see reference numeral 344 in Figure 6) and a command analysis routine (e.g., see reference numeral 340 in Figure 6) with a set of sequences, for example, as described in Figures 12-17 in order to reduce the amount of image data to be transferred through the communication channel (e.g., see reference numeral 22 in Figure 1) from the computer to the display apparatus and also to reduce the effect of occasional communication errors on the communication channel.

For example, independent claim 1 recites, *inter alia*, a first apparatus including:

a scheduler for merging a plurality of said transfer data meeting a certain requirement; and
a communication controller for generating transfer packets each including at least one of one or more said transfer data whose amount is within a certain predetermined range and one or more said merged transfer data,
said communication controller transferring said generated transfer packets to said second apparatus (emphasis added).

In comparison, Yatsuka solves a different problem using a different method and apparatus.

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For example, the claimed merging operations of the claimed invention clearly are different from the merging operations of Yutaka. That is, Yutaka defines "merging operations" as a composition of video frames from a sequence of control and drawing instructions.

(Applicants note that the drawing commands of the present invention include what Yutaka identifies as control instructions. Thus, for the Examiner's convenience, Applicants simply use "drawing instructions" hereafter to indicate both control and drawing instructions in the Yutaka reference.)

Indeed, Yutaka transfers the entire image for each video frame from the frame memory to the image monitor device in a similar manner as in conventional graphics systems. There is no aim to reduce the amount of image data to be transferred, or even recognition by Yutaka (or Peaslee) that this is a problem.

In the claimed invention, on the other hand, "merging operations" are defined as a generation of drawing instructions to be transferred from the computer to the display apparatus by combining the effect of multiple drawing instructions that affect the same area in a short period of time on the frame buffer.

In other words, Yutaka transfers the entire video frame for each video frame from the computer to the display apparatus, regardless of the result of the merging operations.

The claimed invention, on the other hand, transfers only updated areas on the frame memory in the form of a drawing instruction, thereby reducing the amount of image data to be transferred from the computer to the display apparatus.

For example, according to the device and method of Yutaka, if an application program fills a rectangle with a pattern and then draws a character string in the rectangle, a drawing

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device section (e.g., see reference numeral 61 in Figure 1 of Yutaka) performs the fill operation and the text draw operation sequentially to update the frame memory. The entire image of the video frame is transferred to the image monitor device (e.g., see reference numeral 65 in Figure 1 of Yutaka) periodically.

In comparison, in an exemplary aspect of the claimed invention, a drawing engine (e.g., see reference numeral 122 in Figure 2) performs the fill operation and the text draw operation sequentially in a similar way that as conventional graphics subsystems. However, in the claimed invention, the computer transfers only the bitmap image of the updated rectangle area to the display apparatus in a form of a drawing instruction after both fill and text draw operations are completed.

Thus, Applicants respectfully submit that Yutaka clearly does not disclose or suggest all of the features of the claimed invention for which it is relied upon, and more particularly, a "scheduler for merging a plurality of said transfer data meeting a certain requirement", as claimed in independent claim 1.

Moreover, even assuming *arguendo* that it could be argued that the system bus (e.g., see reference numeral 41 in Figure 1 of Yutaka) would correspond to the communication channel (e.g., see reference numeral 22 in Figure 1) and if the drawing device section (e.g., see reference numeral 61 in Figure 1 of Yutaka), the frame memory (e.g., see reference numeral 63 in Figure 1 of Yutaka), and the image monitor device (e.g., see reference numeral 65 in Figure 1 of Yutaka) would be taken into (part of) the display apparatus (e.g., see reference numeral 16 in Figure 1), Applicants submit that the claimed invention is fundamentally different from Yutaka in several aspects.

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For example, an exemplary feature of the claimed invention performs merging operations in order to reduce the amount of data to be transferred over the communication medium (i.e. communication channel).

Yutaka, on the other hand, does not include a device or method to reduce the amount of data to be transferred over the communication medium (i.e. system bus).

Moreover, an exemplary feature of the claimed invention includes a device and method that reduces the effect of communication errors over the communication medium.

On the other hand, Yutaka does not include such a device or method for reducing the effect of communication errors over a communication medium.

With respect to Peaslee, Applicants respectfully submit that the claimed invention also is different from Peaslee, and thus, Peaslee does not make up for the deficiencies of Yutaka.

For example, Peaslee uses a scheduler to promote parallel processing with multiple independent graphics units (e.g., see Peaslee at Abstract) by monitoring the status of input and output for each subsystem (e.g., see Peaslee at column 5, lines 5-59).

In an exemplary feature of the claimed invention, on the other hand, the scheduler generates a drawing instruction by combining the results of multiple drawings instructions which update the same area, in order to reduce the amount of data to be transmitted from a computer to a display apparatus. The scheduler also translates drawing instructions to remove the interdependency (e.g., see step S128 in Figure 12; see also the exemplary aspect of the invention as defined by dependent claim 4) if such translations do not increase the amount of the data to be transmitted to the display apparatus.

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In comparison, the scheduler in Peaslee does not perform such combining or translating operations according to the novel and unobvious manner performed by the claimed scheduler of the present application.

Therefore, even assuming *arguendo* that it would have been obvious to combine Yutaka and Peaslee, Applicants respectfully submit that any resulting combination of these references would not disclose or suggest all of the novel and unobvious features of the claimed invention in as complete detail as recited in independent claim 1.

Thus, Applicants submit that Yutaka and Peaslee, either alone or in combination, would not have anticipated, or rendered obvious, the claimed invention, as defined by independent claim 1.

Applicants submit that independent claim 2 recites somewhat similar features as independent claim 1. For example, independent claim 2 recites, *inter alia*, a first apparatus including:

means for merging a plurality of said transfer data meeting a certain requirement;

means for generating transfer packets each including at least one of one or more said transfer data whose amount is within a certain predetermined range and one or more said merged transfer data; and

means for transferring said generated transfer packets to said second apparatus (emphasis added).

In the present application, the specification discloses means for merging a plurality of the transfer data meeting a certain requirement. The light diffusing means includes, among others things, a scheduler for judging whether an offset can be performed by merging an increment of

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data volume caused by a change of drawing commands (as defined, for example, in dependent claim 3).

Applicants submit that, for somewhat similar reasons as those set forth above, Yutaka and Peaslee, either alone or in combination, do not disclose or suggest any structure, equivalents thereof, or identity of function necessary for the claimed means for merging.

Applicants respectfully submit that Yutaka and Peaslee also do not disclose or suggest the exemplary method as defined, for example, by independent claim 7, or the medium for mediating a program for transferring transfer packets according to the claimed invention, as defined, for example, by independent claim 11, for somewhat similar reasons as those set forth above with respect to independent claims 1 and 2.

For example, independent claim 7 recites, *inter alia*, a first apparatus being capable of:

merging a plurality of said transfer data meeting a certain requirement;

generating transfer packets each including at least one of one or more said transfer data whose amount is within a certain predetermined range and one or more said merged transfer data; and

transferring said generated transfer packets to said second apparatus (emphasis added).

Thus, Applicants submit that Yutaka and Peaslee, either alone or in combination, would not have anticipated, or rendered obvious, the claimed invention, as defined by independent claims 1, 2, 7, and 11. Moreover, dependent claims 3-6, 8-10, and 12-14 also are patentable over Yutaka and Peaslee by virtue of their dependency from independent claims 2, 7, and 11, respectively, as well as for the additional features recited therein.

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For all of the reasons stated above, the claimed invention is fully patentable over the cited references and Applicants respectfully request that the Examiner withdraw this rejection and permit these claims to pass to immediate allowance.

As an aside, Applicants respectfully note that Vigesna (U.S. Patent No. 5,640,588) has been cited but not relied upon by the Examiner in rejecting the claims of the present application. Therefore, Applicants have not commented on the Vigesna reference, or the Examiner's characterization of the Vigesna reference, at this time. Applicants reserve the right to traverse the Vigesna reference should it subsequently be relied upon by the Examiner in a newly raised ground of rejection.

III. NEW CLAIMS

New claims 15-25 have been added to provide more varied protection for the present invention as described in the original specification and drawings. No new matter is added.

Applicants submit that claims 15-25 are patentable at least for somewhat similar reasons as those set forth above. Therefore, Applicants request that the Examiner permit claims 15-25 to pass to immediate allowance.

IV. FORMAL MATTERS AND CONCLUSION

Applicants respectfully request that the Examiner acknowledge receipt of and approve the formal drawings filed on October 10, 2000.

In view of the foregoing, Applicants submit that claims 1-25, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition

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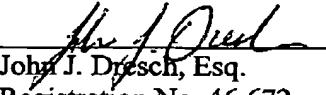
for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

Date: September 24, 2004

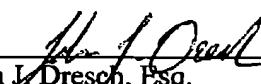

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CERTIFICATE OF TRANSMISSION

I certify that I transmitted via facsimile to (703) 872-9306 the enclosed Amendment under 37 C.F.R. § 1.111 to Examiner Joni Hsu on September 24, 2004.


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